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ABSTRACT

This paper reports on surveys of teachers and students at Middle Tennessee State University (MTSU) that examined the impact of technology on teaching and learning at. The first section describes the questionnaires, which focused on each population's perceptions and opinions about instructional technology, the frequency of use, projected use, and demographics. The second section provides an overview of the 2 initial surveys, i.e., a survey of MTSU faculty in 1998 and a survey of students in the spring term of 1999. The third section provides details about the follow-up studies conducted in the fall term of the year 2000 and the spring term of 2001. The two sets of results for each of the two populations are compared. (MES)

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Revisiting the Impact of Technology on Teaching and Learning at Middle Tennessee State University: A Comparative Case Study

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Introduction

Middle Tennessee State University (MTSU) in Murfreesboro, Tennessee, is an emerging major institution of higher education in the state, region, and nation serving a diverse population of full- and part-time, traditional and non-traditional students. The University has experienced a steady student population growth and provides a positive educational experience in a supportive campus environment. In the 2000-2001 academic year, 19,121 students are enrolled in six undergraduate colleges and thirty-five graduate studies areas. MTSU's administration maintains an unwavering commitment to promoting instructional technology as a crucial part of the higher education equation for their faculty and students.

How do the faculty and students of MTSU feel about the effectiveness of instructional technology on their campus? The Office of Information Technology (OIT) embarked on a survey of MTSU faculty in the spring 1998, and of students in spring 1999, to assess the impact of technology on teaching and learning. However, because of on-going innovations and wider availability of new technology, a strong possibility existed that the findings of these surveys had become outdated in two short years. A new set of data was needed to determine the impact of these changes; therefore, in fall 2000 and spring 2001, follow-up surveys targeted the same populations.

At the time of the initial studies, great strides had been made in the area of instructional technology (IT) at MTSU. Microcomputers had been provided for every full-time faculty member, a new academic building equipped with technology-based classrooms had opened in 1997, faculty had been enjoying a comprehensive level of instructional technology support featuring access to technology that includes a campus-wide network, technology-based classrooms, computer labs, and two multimedia development centers. Additionally, faculty were offered training in the use of hardware and software, consultation with instructional technology staff, release time to develop technology-based instructional materials, and recognition of their instructional technology achievements. In

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addition to continuing and expanding support in all these areas in the two years between the two sets of surveys, OIT has also increased its support staff, the conductivity of its Internet network, and the number of technology-based classrooms. The University also purchased a site license for Blackboard's web course creation and management software, CourseInfo, which has resulted in a significant increase in the number of web-assisted and web-based courses. Currently, over four hundred and ninety-five courses are being offered using CourseInfo.

The purpose of this paper is to offer a description of the questionnaires, an overview of the two initial surveys, the details about the follow-up studies, and a comparison of the two sets of results for each of the two populations. As was the case with their predecessors, the results have provided valuable information that will help determine measures for improving educational technology resources and services for MTSU faculty and students.

The Questionnaires

Rather than compare the effectiveness of instructional technology to traditional teaching, comprised of many dynamic, immeasurable, and complex components, the authors of the initial studies measured IT's impact on the depth and breadth of content covered, student performance, and good teaching practices widely acknowledged as catalysts for improved learning. The good teaching practices used in the surveys were adapted from the "seven principles of good practice in undergraduate education." (Chickering & Gamson, 1987) The practices include student interaction with instructor, student collaboration, student participation and feedback and high expectation of student performance.

The ten to fifteen minute questionnaires consisted of four parts focusing on each population's general perceptions and opinions about instructional technology, the frequency of use, projected use, and demographics. While faculty at large were polled, only undergraduate students taking courses in technology-based classrooms whose faculty agreed to participate in the study received the questionnaire. After having each questionnaire sample tested by a group of faculty and students, the surveys were determined to be reliable. Faculty surveys were mailed out, and student surveys were distributed through the participating faculty. The anonymity of both populations was closely guarded. The response to the initial studies reflected 35% of the faculty and 8% of all undergraduate students. The response to the follow-up studies included 23% of the faculty and 8% of all undergraduate students.

The Initial Studies

Results of the initial faculty survey showed that the overwhelming majority of MTSU faculty believes that IT is essential and is being widely used across campus with different technologies accommodating different teaching practices. Five major findings emerged which were used to help MTSU faculty and administrators better understand the state of IT on the campus and identify the resources that are needed to ensure its future:

1. Faculty believe that IT is essential
2. Faculty have a variety of needs relating to IT
3. IT is being widely used across the campus
4. Different IT accommodate different teaching practices
5. Faculty IT use will continue to increase

The results of the initial student survey yielded similar findings:

1. The use of IT positively affects student learning
2. The use of IT increases student interest and satisfaction
3. The role of faculty and their ability to use IT are major factors
4. Certain IT techniques better facilitate certain learning activities
5. IT is an integral part of today's learning environment

The results of the initial studies concur with one another. Faculty demonstrate their acceptance and adoption of IT as a "good teaching" practice, while students agree that it significantly enhances their learning; however, the study data revealed that from the faculty perspective, lack of time and resources limits the development and implementation of technology in instruction.

The Follow-up Studies

The follow-up studies were based on the same principles as their original counterparts and aimed at the same goals. Even the same method of administering the questionnaires to the faculty and students was used. The format of the questionnaires was kept the same; however, some questions were modified and a couple added to reflect the increased growth of web-based learning opportunities.

The results of the follow-up faculty survey echo the major findings of its predecessor, with faculty reporting that IT is essential. Additionally, faculty continue to feel 1) that their office equipment is adequate, 2) that technology-based classrooms are important, and 3) that web-based training enhances student learning. However, faculty report a need for 1) more time to develop and adapt course materials for the use of IT, 2) a more positive effect on tenure and promotion as a result of integrating IT, and 3) more training. Faculty are ready and eager to meet the demand in the use of IT; as they become more aware of the potential, they desire more training. While only twenty-nine percent feel competent in using web-authoring tools, an impressive thirty-seven percent indicate having the skills and knowledge to use course-management products such as CourseInfo.

It is also encouraging that there continues to be no significant difference in the responses among faculty ranks, among tenure/non-tenure faculty, nor among their years in education or years at MTSU. Interestingly, the percentage of faculty responding from the different colleges does show a healthy increase among Liberal Arts faculty, from eighteen percent in the initial survey to twenty-six percent in the follow-up. This increase could be indicative of the influx of IT into this area where it had been lacking before. However, in spite of the change in percent of faculty responding, there are also no

significant differences in faculty perceptions among colleges, a clear indicator of the type of prevalent and readily available training and assistance already being provided on our campus.

In the area of different IT accommodating different teaching practices, the same high rate of correlation between survey results exists. Eighty-seven percent of the respondents in the initial survey perceive positive effects of the use of electronic communication. In the follow-up survey, more specific types of communication were indicated, and while, email received a higher percentage, ninety-eight percent, discussion boards and virtual chats show they are still in the development stages, thirty-five and twenty-eight percent, respectively. The increase in these areas leads to a decline in the use of other audio-visual equipment, from eighty-one to seventy-five percent. Faculty continue to underestimate the positive effect of technology on student performance; in each area of IT application covered in the initial and follow-up questionnaires, performance exceeded expectation; however, they express concerns that the technology needs to be thought of as a tool and that it is the effective use of that tool which makes the difference in its impact on learning. As one faculty put it, "By itself, it is neither important or unimportant; how it is used is what makes any technology workable and effective." The results of these positive views affect faculty projections on the future use of IT.

The data from both surveys reveal not only that the use of IT will continue to grow among MTSU faculty, but that the level of sophistication in the applications will also. Twenty-five percent of the respondents indicated that they would use the web as the primary source for course delivery in the future.

The results of the follow-up student survey continue to show a high degree of positive student attitude in the areas of IT's effect on student learning, interest, and satisfaction, and they now perceive IT as an expected part of today's learning environment. Ninety-five percent of responding students continue to agree that "the use of technology in the classroom can enhance student learning." Results also show a ten to sixteen percent increase in the number of students reporting competency in basic computer applications, electronic communication, and use of web-based materials. However, the ability of faculty to use technology as an effective teaching tool remains an issue for some students. They express concerns about faculty who lack the proper skills to use or who misuse the technology.

Encouragingly, a statistical comparison on Part I of the survey, on the availability of IT at MTSU, shows a significant change in a positive direction, indicating that students are aware of the more widespread availability of technology. In contrast, Part II shows no significant statistical change, continuing to reflect positive student perception of faculty IT use and its effect on student learning. Part III, on projected use of IT, shows significant statistical movement in the negative direction, suggesting that because IT is more commonplace, students are more likely to make decisions about courses based on variables other than technology applications.

Conclusion

The results of new studies and their comparison to their predecessors have yielded some interesting and encouraging results. Just as with the initial surveys, there is a highly positive trend in the responses and the perception of the value of IT. This indicates the University continues to make progress in disseminating information, training, and supporting faculty in the use of IT, but more importantly, it indicates that the interest in and readiness for implementing IT continues to grow unabatedly. On the other hand, some student comments point out weaknesses in the pedagogical application of IT, expressing concerns over faculty competence with and, in some cases, the wise use of IT. This information will help OIT to redirect the focus of its faculty training from technical competency to effective technology integration. Complete results from the initial and follow-up studies (questionnaires and reports) are available at http://www.mtsu.edu/~itsurvey .

REFERENCES

Chickering, Arthur and Zelda Gamson (1987) "Seven Principles of Good Practice in Undergraduate Education," AAHE Bulletin (March).